Index

to

1932 Transactions

A

Page

Acid and basic slags in conditioning steel 446
Alloy additions in ladle, Effect of, in producing "speckled" fracture in malleable iron 252
Alloys, Effect of, on properties of cast iron 491
Aluminum-Alloy Castings:
  Bibliography on pinholes and shrinks in 545
  Practical foundry considerations for improving soundness of 527
  Shrinks in 529
Aluminum Alloys:
  Fluxes for 540
  Pouring temperatures for 533
Aluminum and brass castings, Design of 518
Annealing, Bibliography on short-cycle malleable iron 86
Annealing ovens, Oil-fired, for short-cycle annealing of malleable iron 79
Annealing time, Two methods of reducing malleable iron 75
Antimony added to cast iron, Effect of 501
Apprentices, Cost of training and training schedules for 217, 222
Arsenic added to cast iron, Effect of 504

B

Bibliography:
  Deoxidizers for brass and bronze 56
  Pinholes and shrinks in aluminum-alloy castings 545
  Short-cycle annealing of malleable iron 86
Bismuth added to cast iron, Effect of 501
Blast volume of cupolas 488
Bond distribution in sand grains, Method for microscopic examination of 231
Bond distribution in synthetic molding sand, Grain size and 230
Borings:
  Open-hearth furnace for recovering cast iron from 266
  Results obtained in melting cast iron 396
Brass:
  Bibliography on deoxidizers for bronze and 56
  Phosphorus as deoxidizer in red 47, 48
  Shrinkage of bronze and nickel 303
Brass and copper added to cast iron, Effect of 506
Brass and high-lead bronze, Critical pouring temperatures of yellow and red 300
Brass Castings:
  Design of bronze and 518
  Effect of nickel on shrinkage in red 304

Page

Brass Castings:
Influence of design on bronze and ... 360
Recommendations for buyers of ... 515

Brass Foundry:
Materials handling in a small ... 310
Mold conveying in a small ... 315
Safety precautions in ... 317
Sand control in ... 312

Briquets, Use of silicon and manganese, in cupola ... 17

Brittleness of malleable iron, Effect of heat treatment on ... 407

Bronze Castings:
Design of brass and ... 518
Influence of design on brass and ... 360
Method for observing shrinks in ... 209

Bronze cylinder liner, Design of ... 373

Bronze mixtures, Composition of nickel ... 299

Bronze:
Bibliography on deoxidizers for brass and ... 56
Casting properties of nickel ... 289
Composition and mechanical properties of Navy ... 362
Critical pouring temperatures of yellow and red brass and high-lead ... 300
Effect of nickel on fluidity of ... 293
Shrinkage of nickel brass and ... 303

Building costs and replacement values ... 473

Bureau of Mines experimental open-hearth furnace, Plan of ... 271

Buyers of castings, Recommendations for ... 515

C

Cadmium added to cast iron, Effect of ... 503

Cast Iron:
Bar for determining linear contraction of ... 192
Coke bed and cupola blast control for high-test ... 161
Contribution to study of quenching of alloy ... 1
Costs ... 461
Effect of antimony added to ... 501
Effect of arsenic added to ... 504
Effect of bismuth added to ... 501
Effect of brass and copper added to ... 506
Effect of cadmium added to ... 503
Effect of chromium, manganese, nickel and silicon on ... 6
Effect of eleven metals or alloys on physical properties of ... 491
Effect of lead added to ... 499
Effect of quenching temperatures on Brinell hardness of ... 12
Effect of tin added to ... 499
Hard machinable ... 3
Heat treatment of ... 3, 337
High-test, for pressure castings ... 153
Impact tests on ... 498
Investigations on graphitization of white ... 73
Martensitic quenching of ... 1
Mixtures, Perlit process and heat treatment of ... 325
Open-hearth furnace for recovering, from borings ... 266
Perlit process of making ... 333
Properties and applications of heat-treated ... 13
Recommendations for buyers of ... 515
Risers for high-test ... 162
Rotary pulverized-fuel-fired furnace for melting ... 387-392
Shop method for determining volume changes in ... 188

Page

Cast Iron:
Shrinkage data of fourteen types of ... 177
Solidification range of ... 181
Specific volume of ... 178
Specific volume of liquid ... 190
Steel in mixtures of ... 22
Steel scrap in mixtures of ... 327
Theory of embrittlement of ... 430
Use of separate cupolas for melting hard and soft iron in producing high-test ... 155
Volume changes of, during casting ... 172
Cast iron borings, Results obtained in melting ... 396
Cast iron melting, Coke bed for high-test ... 160
Chill molds for cast iron tests ... 498
Chills in steel castings, Use of ... 145
Chromium, Effect of, on martensitic cast iron ... 6
Clay for steel molds, Specifications for ... 278
Clay Bond:
Effect on physical properties of mold with varying percentages of 66
Relative milling time required to distribute, in sand ... 235
Clays for bonding sand ... 277
Cleanliness of steel castings, Factors affecting ... 444
Coke bed for high-test cast iron melting ... 160
Coke charges for cupolas ... 487
Contraction and solidification of steel castings ... 146
Copper and brass added to cast iron, Effect of ... 506
Core testing ... 355
Cores and molds in steel foundry, Specifications for raw materials for 276
Cost methods classified ... 462
Cost systems, Fundamentals of ... 478
Costs:
Apprentice training ... 220
Foundry ... 461
Short-cycle malleableizing, by various methods ... 83
Costs and replacement values of buildings and equipment ... 473, 475
Cupola blast control for high-test iron ... 161
Cupola blast volume ... 488
Cupola charging ... 485
Cupolas:
Coke charges for ... 487
Report on recommendations for operation of ... 483
Use of separate, for melting hard and soft iron in producing high-test cast iron ... 155
Use of silicon and manganese briquets in ... 17
Cylinder liner, Design of large bronze ... 373

D

Deformation test of sand ... 352
Deoxidizers:
Phosphorus as, in red brass ... 47, 48
Ability of elemental metals as ... 49
Bibliography on brass and bronze ... 56
Deoxidization of basic steel ... 447
Depreciation in costing methods ... 473
Design:
Foundry factors affecting steel casting ... 125
Influence of, on brass and bronze castings ... 360
Nonferrous casting ... 518
Durability test of sand ... 355

Page

E

Elutriation method for testing sand fineness 347
Equipment costs and replacement values 475
Equipment used in commercial production of malleable iron by short cycles 76

F

Fineness, Effect of sand, on mold properties 68
Fineness tests, Sand 346
Fluidity of bronzes, Effect of nickel on 293
Fluidity test specimen 294
Fluxes for aluminum alloys 540
Fuel cost in melting cast iron in rotary pulverized-fuel-fired furnace .. 392
Furnace:
  Rotary pulverized-fuel-fired, for melting iron 387
  Pulverized-fuel-fired, for short-cycle annealing of malleable iron .. 78

G

Gating terms, Recommendations for 510
Grain Size:
  Bond distribution and, in synthetic molding sand 230
  Relation of surface area to sand 236
Graphitization of white cast iron, Investigations on 73

H

Hardness of cast iron, Brinell, Effect of quenching temperature on 12
Heat-treated cast iron, Properties and applications of 13
Heat Treatment:
  Cast iron 3, 337
  Effect of, on characteristics of black-heart malleable iron 401-407
  Manganese steel 37
  Perlit process and mixtures of cast iron 325
High-Test Cast Iron:
  Coke bed and cupola blast for melting 160, 161
  Pressure castings of 153
  Risers for 162
  Use of separate cupolas for melting hard and soft iron in producing 155

I

Impact tests on cast iron 498
Impact values of malleable iron, Effect of heat treatment on 403

L

Lead added to cast iron, Effect of 499

M

Malleabilization:
  Costs for various methods of short-cycle 83
  Factors affecting rate of 103
  Metallurgy of 88

Page

Malleable Iron:
Bibliography on short-cycle annealing of 86
Effect of alloy ladle additions in producing "speckled" fracture in 252
Effect of heat treatment on characteristics of black-heart 401-407
High-silicon pig iron for manufacture of 241
Oil-fired ovens for short-cycle annealing of 79
Pulverized-fuel-fired furnace process for short-cycle annealing of. 78
"Speckled" fracture of 242, 244
Theory of embrittlement of 430
Two methods of reducing annealing time of 75

Malleable Iron Castings:
Nitrogen and oxygen in pig iron for 255
Recommendations for buyers of 515

Malleableizing Cycles:
As used with various types of equipment 81
Minimum 115
Short 72
Manganese, Effect of, on martensitic cast iron 6
Manganese and silicon briquets in cupola, Use of 17

Manganese Steel:
Heat treatment of 37
Method used in making 32
Production and application of, in Australia 29
Manganese steel castings, Risers and molds for 41, 42
Martensitic cast iron, Effect of chromium, manganese, nickel and silicon on 6

Materials Handling:
In small brass foundry 310
Monorail, in the foundry 375
Materials handling systems, Rules for planning 378
Moisture and strength control of sand in steel molding 283

Mold Hardness:
Control and testing of 63, 64
Effect of sand grain or permeability on 67

Mold Properties:
Effect of sand fineness on 68
Relation of shear strength and permeability to other 65, 66
Mold wash, Specifications for steel 280
Molding sand, Grain size and bond distribution in synthetic 230

Molds:
Conveying, in small brass foundry 315
Effect on physical properties of, with varying percentages of clay bond 66
Preparation of, for manganese steel 42
Molds and cores, Specifications for raw materials for, in steel foundry 276
Monorail materials handling in the foundry 375

N

Navy bronze, Composition and properties of 362
Nickel:
Effect of, on fluidity of bronzes 293
Effect of, on martensitic cast iron 6
Effect of, on shrinkage in red brass castings 304
Nickel brasses, Shrinkage of bronzes and 303
Nickel bronze, Casting properties of 289
Nickel bronze mixtures, Composition of 299
Nickel-tin bronzes, Liquidus temperatures of 291
Nitrogen and oxygen in pig iron for malleable castings 255
Nonferrous castings, Design of 518

Page

O

Open-Hearth Furnace:
Plan of Bureau of Mines experimental 271
Recovering cast iron from borings in 266
Oxygen and nitrogen in pig iron for malleable castings 255

P

Perlit process, mixtures and heat treatment of cast iron 325
Perlit process of making cast iron 333
Permeability:
Effect of sand grain or, on mold hardness 67
Importance of, in green and dry sand steel molding 282
Relation of, to other mold properties 65
Permeability test of sand 349, 356
Phosphorus as deoxidizer in red brass 47, 48
Phosphorus and sulphur in steel, Report of A. F. A. representative on joint committee on investigation of 344
Pig Iron:
High-silicon, for malleable iron manufacture 241
Nitrogen and oxygen in, for malleable castings 255
Pinhole porosity in aluminum-alloy castings, Causes of 528
Pinholes and shrinks in aluminum-alloy castings, Bibliography on 545
Pouring Temperatures:
Critical, of yellow and red brass and bearing and high-lead bronzes 300
Aluminum-alloy castings 533
Pressure castings, High-test cast iron for 153
Pulverized-Fuel-Fired Furnace:
Melting iron in rotary 387
Process of short-cycle annealing of malleable iron in 78

Q

Quenching, Contribution to study of alloy cast iron 1
Quenching temperatures, Effect of, on Brinell hardness of cast iron .. 12

R

Recommended practice for cupola operation 478
Refractories for rotary pulverized-fuel-fired furnace melting cast iron. 389
Refractoriness test of sand 358
Risers:
Application of, for steel castings 143
High-test cast iron 162
Manganese steel castings 41

S

Safety precautions in a brass foundry 317
Sand Control:
Procedure in steel foundry 280
Testing apparatus for, in steel foundry 274
Brass foundry 312
Steel molding 283

Page

Sand grain, Effect of permeability or, on mold hardness 67
Sand grains, Method for microscopic examination of bond distribution in 231
Sand handling in a brass foundry 314
Sands:
  Clays for bonding 277
  Deformation tests of 352
  Durability tests of 355
  Effect of fineness of, on mold properties 68
  Fineness tests of 346
  Foreign methods of testing foundry 345
  Permeability in green and dry, for steel molding 282
  Permeability tests for 349, 356
  Refractoriness tests of 358
  Relation of surface area to grain size of 236
  Relative milling time required to distribute clay bond in 235
  Test for penetration of metal into 275
Scrap iron mixtures, Steel 327
Shear strength, Relation of, to other mold properties 65
Shrinkage:
  Cast iron 172
  Data for fourteen cast irons 177
  Effects of nickel on, in red brass castings 304
  Linear, Bar for determining total cast iron 192
  Method for study of, and its distribution in castings 201
  Nickel brasses and bronzes 303
  Steel castings 146
Shrinkage spots in castings, Recording 209
Shrinks and pinholes in aluminum-alloy castings, Bibliography on 545
Shrinks in aluminum-alloy castings 529
Silica flour specifications for steel molds 279
Silicon:
  Effect of, on martensitic cast iron 6
  Effect of, on rate of malleabilization 107
Silicon and manganese briquets, Use of, in cupola 17
Silicon pig iron for malleable iron, High 241
Slags, Acid and basic, in conditioning steel 446
Specific volume of cast irons 178
Specific volume of liquid cast iron, Alignment chart for determining 190
Specifications:
  Raw materials for molds and cores in steel foundry 276
  Silica flour for steel molds 279
  Steel mold wash 280
Steel:
  Acid and basic slags in conditioning 446
  Heat treatment of manganese 37
  In cast iron mixtures 22
  Inclusions in cast 450
  Mold preparation for manganese 42
  Production and application of manganese, in Australia 29
  Report of A. F. A. representative on joint committee on investigation of phosphorus and sulphur in 344
  Work hardening capacity of manganese 39
Steel Castings:
  Contraction and solidification of 146
  Factors affecting cleanliness of 444
  Foundry factors affecting design of 125
  Metallurgical considerations in design of 136
  Risers for 143
  Risers for manganese 41
  Use of chills in 145

Page

Steel Foundry:
Sand control in....273, 280
Specifications for raw materials for molds and cores in.... 276
Steel making, Method used in manganese.... 32
Steel mold wash specifications.... 280
Steel Molding:
Importance of permeability in green and dry sand.... 282
Specifications for clays for.... 278
Specifications for silica flour for.... 279
Strength and moisture control of sand in.... 283
Steel scrap in iron mixtures.... 327
Strength and moisture control of sand in steel molding.... 283
Sulphur in steel, Report of A. F. A. representative on joint committee on investigation of phosphorus and.... 344
Synthetic molding sand, Grain size and bond distribution in.... 230

T

Test for penetration of metal into sand.... 275
Test specimens, Fluidity.... 294
Testing:
Core.... 355
Foreign methods of sand.... 345
Mold hardness, and its effect on mold properties.... 64
Testing apparatus for sand control in steel foundry.... 274
Tests:
Chill molds for cast iron.... 498
Deformation, of sand.... 352
Durability, of sand.... 355
Fineness, of sand.... 346
Fineness, of sand by elutriation method.... 347
Impact, on cast iron.... 498
Permeability, of sand....349, 356
Refractoriness, of sands.... 358
Tin added to cast iron, Effect of.... 499
Training school for foundry apprentices....220, 222

W

Work hardening capacity of manganese steel.... 39

Authors' Index

to

1932 Transactions

Page

ANDERSON, D. G. and MCAULEY, B. F.—Materials Handling in the Small Brass Foundry 310

ASH, E. J. and SAEGER, C. M., JR.—Shop Method for Determining Volume Changes in Cast Iron During Casting 188
Volume Changes of Cast Irons During Casting 172

BALLAY, MARCEL—Contribution to Study of Martensitic Quenching of Alloy Cast Irons 1

BOEGEHOLD, A. L. and JOSEPH, C. F.—High-Silicon Pig Iron for Malleable Iron Manufacture 241

BULL, R. A.—Report of A. F. A. Representative on Joint Committee on Investigation of Phosphorus and Sulphur in Steel 344

CARLZ, J. FRANKLIN—How Much Does It Cost To Train Foundry Apprentices? 217

CHRISTOPHER, C. F., LIGHTNER, M. W., and HERTY, C. H., JR.—Some Factors Affecting the Cleanliness of Steel Castings 444

CLARK, D. and COUTTS, J.—Production and Application of Manganese Steel in Australia 29

COUTTS, J. and CLARK, D.—Production and Application of Manganese Steel in Australia 29

DIERKER, A. H.—Grain Size and Bond Distribution in Synthetic Molding Sand 230

DIETERT, H. W.—Control of Hardness and Other Mold Properties 63
Report of Committee on Nomenclature, Sub-Committee on Definition of Gating Terms 510

FAWCETT, L. H.—Influence of Design on Brass and Bronze Castings .. 360

FORKER, J. B.—Monorail Materials Handling and the Foundry 375

GINGERICH, E. M. and ROWE, H. J.—Practical Foundry Considerations for Improving the Soundness of Aluminum-Alloy Castings 527

GROVER, A. E.—Joint Cost Conference 461

HERTY, C. H., JR., CHRISTOPHER, C. F. and LIGHTNER, M. W.—Some Factors Affecting the Cleanliness of Steel Castings 444

HIGHRITER, H. W.—Short-Cycle Malleableizing 72

JOSEPH, C. F. and BOEGEHOLD, A. L.—High-Silicon Pig Iron for Malleable Iron Manufacture 241

JOSEPH, T. L. and WOOD, C. E.—The Open-Hearth Furnace as a Means of Recovering Cast-Iron from Borings 266

JUDSON, H. H.—High-Test Iron for Pressure Castings 153

KIHLGREN, T. E. and PILLING, N. B.—Casting Properties of Nickel Bronzes 289
Method for Study of Shrinkage and Its Distribution in Castings .. 201

KIKUTA, T.—Effect of Thermal Treatment on Characteristics of Black-Heart Malleable Iron 401

LEUN, A. V.—Sand Control in the Steel Foundry 273

Page

LIGHTNER, M. W., HERTY, C. H., JR. and CHRISTOPHER, C. F.—Some Factors Affecting the Cleanliness of Steel Castings 444

MCAULEY, B. F. and ANDERSON, D. G.—Materials Handling in the Small Brass Foundry 310

MACKENZIE, JAS. T.—Introduction to Final Report on Volume Changes of Cast Iron During Casting 168

PARSONS, R. W.—Phosphorus in Red Brass 47

PILLING, N. B. and KIHLGREN, T. E.—Casting Properties of Nickel Bronzes 289

Method for Study of Shrinkage and Its Distribution in Castings .. 201

RANSOM, L. H.—Use of Silicon and Manganese Briquets in the Cupola 16

REESE, D. J.—Melting Iron in the Rotary Pulverized-Fuel-Fired Furnace 387

RIES, H.—Some Foreign Methods of Testing Foundry Sands 345

ROWE, H. J. and GINGERICH, E. M.—Practical Foundry Considerations for Improving the Soundness of Aluminum-Alloy Castings 527

SAEGER, C. M., JR. and ASH, E. J.—Shop Method for Determining Volume Changes in Cast Iron During Casting 188

Volume Changes of Cast Irons During Casting 172

SCHNEIDEWIND, R. and WHITE, A. E.—The Metallurgy of Malleabilization 88

SPENCER, W. H. and WALDING, M. M.—Effects of Eleven Metals or Alloys on Physical Properties of Gray Cast Iron 491

WALDING, M. M. and SPENCER, W. H.—Effects of Eleven Metals or Alloys on Physical Properties of Gray Cast Iron 491

WHEELER, K. V.—Foundry Factors Affecting Steel Casting Design ... 125

WHITE, A. E. and SCHNEIDEWIND, R.—The Metallurgy of Malleabilization 88

WOOD, C. E. and JOSEPH, T. L.—The Open-Hearth Furnace as a Means of Recovering Cast-Iron from Borings 266

YOUNG, H. J.—Some Thoughts Concerning Mixtures, the Perlit Process and the Heat Treatment of Cast Iron 325

Transactions Material as Printed in bi-monthly "Transactions"

All 1932 *Transactions* material, as cross-indexed on pages 547-556 inclusive, has been printed in issues of the bi-monthly "Transactions of A. F. A." To find quickly the bi-monthly issue in which any indexed subject appears, refer to the following:

Bi-Monthly Issue	*Transactions pages*
May-June, 1932	1-124
July-August, 1932	125-240
September-October, 1932	241-344
November-December, 1932	345-460
January-February, 1933	461-556